

Pre-Conference Workshop at the TeaP 2022 in Cologne on
Multinomial-Processing-Tree Modeling: Basic Methods and Recent Advances

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Guest: Karl Christoph Klauer

Workshop Day 1: Basics of MPT Modeling (Saturday, March 19th, 9:00-15:00)

- 9:00 – 9:15: Introduction & Overview
- 9:15 – 10:30: Basics (Instructor: EE)
 - Introduction to standard MPT models (logic, examples, advantages, limitations)
 - Model development (model construction, paradigm, data structure, identifiability)
 - Parameter estimation (maximum likelihood, minimum χ^2 , power-divergence statistics)
 - Model assessment (G^2 , Pearson's χ^2 , and the PD^λ family of goodness-of-fit statistics)
- *Break*
- 10:45 – 12:00: Application I (Instructor: EE, DH)
 - Introduction to multiTree (EQN syntax, data files, batch analysis)
 - Practical exercises
 - optional: Order constraints
- *Lunch Break*
- 13:00 – 13:45: Advanced features of multiTree (Instructor: EE)
 - Identifiability concepts and checks provided by multiTree
 - A priori and post hoc statistical power analyses
 - optional: Model selection (AIC, BIC, NML, and FIA criterion)
- *Break*
- 14:00 – 15:00: Application II (Instructor: EE, DH)
 - Workflow with multiTree: Developing and testing a new MPT model
 - Using advanced features in multiTree
 - optional: Testing interactions (EE)

Workshop Day 2: Advances in MPT Modeling (Sunday, March 20th, 9:30-15:00)

- 9:30 – 10:30: Bayesian hierarchical MPT modeling (Instructor: DH)
 - MPT models & heterogeneity
 - Hierarchical MPT models
 - Bayesian estimation with MCMC sampling
 - Adding continuous covariates
- *Break*

- 10:45 – 12:00: Application III (Instructor: DH)
 - Practical exercises on hierarchical MPT modeling using the R package TreeBUGS
 - Basics: Model fitting, convergence, plots, model fit
 - Advanced: Within-/between-subject comparisons, covariates, simulation
- *Noon Break*
- 13:00 – 14:15: MPT modeling of continuous data (Instructor: K. Christoph Klauer)
 - Joint modeling of choices and response times
- *Break*
- 14:30 – 15:00: Application IV (Instructor: DH, EE)
 - Questions and answers
 - Developing and testing (new) models suggested by the participants